TAIHEIYO CEMENT
NEWS LETTER

July 30, 2007

Ultra-High Strength Fiber Reinforced Concrete "Ductal (R)" To Be Used in the Pier Slabs of the Haneda Airport Runway D

Taiheiyo Cement Corporation (President and representative director: Fumio Sameshima) announced today that it will massively supply Ductal(R), an Ultra-high strength Fiber reinforced Concrete (UFC), to the Haneda Airport Runway D construction for the next two years. Their Ductal(R) is to be used in the pier slabs.

For the pier (Figure 1) of the Haneda Airport Runway D, the UFC precast slabs (approx. 7,000 slabs, standard dimension approx. 7.8 m x 3.6 m) will be built in the surrounding area (approx. 200,000 m^2) of the runway and taxiway (Figure 2). The volume of the UFC to be consumed is 24,000 m^3, which will result in one of the world's most slab consumption project.

UFC is a novel material that Japan Society of Civil Engineers has highly valued its 100-year durability, a high level of mechanical performance and the good fatigue resistance. Ductal(R) is a material that conforms to the UFC requirements. By using the UFC slabs made of Ductal(R), a significant cost reduction can be obtained on the whole pier structure, thanks to the long-life durability and the lightweight design of Ductal(R). It was these merits that helped win the Ministry's designation as a material for the UFC slabs. As the result, Taiheiyo Cement will be supplying an average volume of 1,000m^3 Ductal (R) every month for two years from this December.

Ductal (R) material is delivered to the exclusive precast slab production yard for UFC, where it is mixed, placed in forms, stripped from forms and steam cured to manufacture the UFC slabs. The UFC slabs are then transported by sea to the runway construction site controlled by the Haneda Runway D Re-expansion Construction Joint Venture (Kajima, Obayashi, Penta-Ocean, Saeki, Shimizu, Nippon Steel Engineering, JFE Engineering, Taisei, Toa, Toyo, Nishimatsu, Maeda, Mitsubishi Heavy Industries, Mirai and Wakachiku) to be installed.

In addition to supplying Ductal(R) as a material, Taiheiyo Cement also takes charge of the mixing operation for the UFC slabs. During this period, they make a good use of the quality control know-how unique to Ductal(R). In this way, they can help produce the high quality UFC slabs having a long-life durability and a high fatigue strength through the design service life of 100 years.

Technical information

The pier section of the Haneda Airport Runway D consists of two structures: the submarine structure of steel pipes and steel jackets, and the concrete slab structure built over the steel beams. This will be one of the world's largest slab installation; the central area (approx. 310,000 m^2), including the runway and the taxiway, is to be covered either by the precast slabs of ordinary concrete (10,700 slabs, standard dimension approx. 6.6 m x 3.3 m) or the continuous concrete slabs having the cast-in-place fillers, while the surrounding area (approx. 200,000 m^2) is to be covered by the UFC precast slabs (approx. 7,000 slabs, standard dimension approx. 7.8 m x 3.6 m).

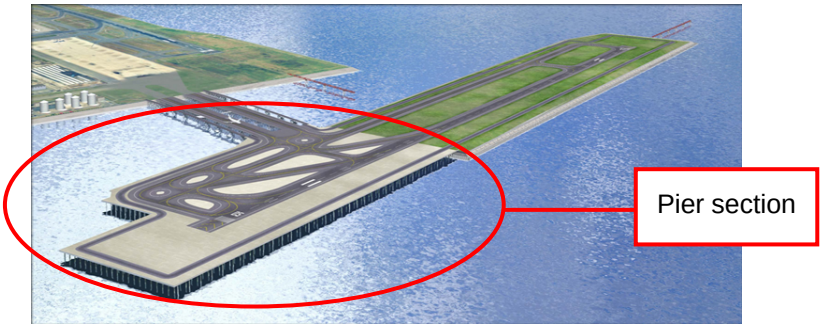

Figure 1　Panoramic view of Runway D

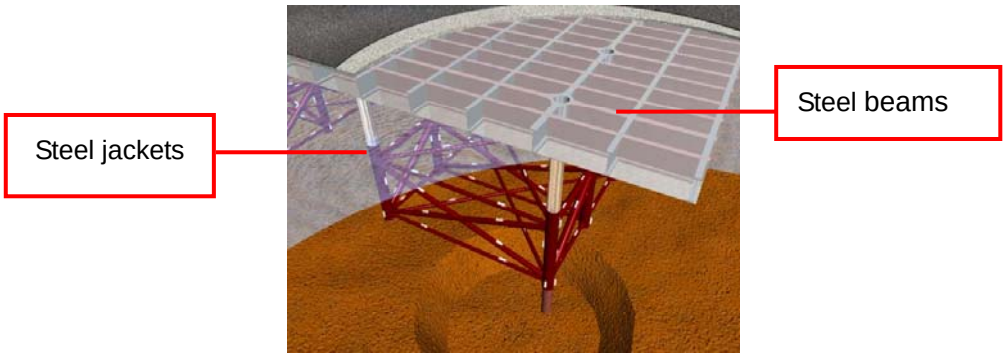

Figure 2　Pier section structure

High strength, high toughness

- Lightening: Dead load can be decreased by 51% compared to the ordinary PC slab

	Ductal slab	PC slab (design Concrete strength: 50 N/mm^2)
Structure	W = 97 kN per slab 	W = 221 kN per slab 
Average Slab depth (only slab)	135 mm	320 mm
Average dead load (includes fillers)	3.83 kN/m^2	7.84 kN/m^2

High durability

- Coefficient of water permeability：$1/10^6$ to $1/10^7$ of an ordinary concrete
- Carbonation rate：less than 1/100 of an ordinary concrete
- Salt damage resistance (chloride ion diffusion): 1/100 to 1/500 of an ordinary concrete
- Freeze-thaw resistance: excellent

Figure 3 Comparison of slabs